DEPARTMENT OF THE ARMY
HEADQUARTERS, WALTER REED ARMY MEDICAL CENTER
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Medical Services

ERGONOMICS PROGRAM

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*This regulation supersedes WRAMC Pamphlet 40-96, dated 1 November 2000.

1. History
This publication is a new WRAMC Pamphlet and does not rescind or supersede a previous publication.

2. Applicability
The provisions of this pamphlet apply to all personnel assigned and attached to Walter Reed Army Medical Center, its outlying clinics and its tenant activities.

3. Purpose
This pamphlet provides guidance for establishing the ergonomics program as an integral part of the Occupational Safety and Health Program and Preventive Medicine Programs in accordance with AR 385-10 and AR 40-5.

4. References
Required and related publications are listed in appendix a.

5. Explanation of abbreviations and terms
Abbreviations and special terms used in this pamphlet are explained in the glossary.

6. Background

a. Ergonomic programs are essential elements of Occupational Safety & Health (OSH) programs as discussed in AR 40-5 and AR 385-10. The goals of WRAMC Ergonomic Program are as follows:

(1) Prevent workplace injuries.

(2) Reduce workers compensation claims and associated costs of productivity of the work force.

(3) Improve overall readiness.

b. Ergonomics programs fall under the:

(1) General Duty Clause, Section 5(a)(1), of the Occupational Safety and Health Act of 1970 (PL 91-596).

(2) DODI 6055.1. “DoD Occupational Safety and Health Program.

(3) DA Pam 40-21 Ergonomics Program.

7. Responsibilities

a. Installation Commander will:

(1) Establish an installation Ergonomics plan based on recommendation of the Safety and Occupational Health Advisory Council (SOHAC).

(2) Designate an installation ergonomics officer.

(3) Approve the installation ergonomics plan based on recommendations of the SOHAC.

b. Garrison Commander will oversee implementation of the Installation Ergonomics plan.

c. Hospital, Garrison and Tenant Commanders will:

(1) Designate a command Safety and Occupational Health (SOH) Program Manager for their organization.

(2) Appoint a representative to the Installation Ergonomics Subcommittee. The representative may be the (SOH) Program Manager.

(3) Ensure Ergonomics is integrated intoall phases of their organization's SOH Program.

(4) Provide sufficient funds and other resources to implement the installations Ergonomics within their organization's.

(5) Ensure their Installation Ergonomics Subcommittee representative are trained to identify, assess, control, and prevent WMSDs.

(6) Demonstrate commitment to the Ergonomics Program.

d. Installation Ergonomics Officers (IEO) will:

(1) Be the Chief, Preventive Medicine Service and the Installation Safety and Occupational Health Manager who will receive at least 40 hours of formal training in ergonomics (see para 12b(2).

(2) Chair the Ergonomics Subcommittee, providing an interface between the Ergonomics Subcommittee and the SOHAC.

(3) Develop an implement the Installation ergonomics plan, with the assistance of the Ergonomics subcommittee and approval of the SOHAC.

(4) Ensure completion of regular (at least semi-annual) evaluation and review of the ergonomics program.

(5) Present at least a semi-annual review to the SOHAC.

(6) Ensure accurate record keeping of Ergonomics Subcommittee reports.

(7) Work with the installation and tenant personnel, the unions, the public, and the appropriate regulatory authorities to effectively address ergonomics issues.

e. The Ergonomics Subcommittee will:

(1) Under the installation SOHAC assist in developing and implementing the installation ergonomics plan.

(2) Oversee and participate in:

(a) Gathering and evaluating injury, lost work time, trend, productivity, and complaint data on worksites and work processes;

(b) Identifying existing and potential ergonomic hazards;

(c) Conducting worksite evaluations;

(d) Setting priorities for identified ergonomic hazard abatement.

(e) Implementing corrective action; and

(f) Providing appropriate worker training.

f. Safety Offices to include tenant activities:

(1) The Safety Manager (or a designated representative) will serve as a co-chair of the Ergonomics Subcommittee.

(2) Perform the annual Standard Army Safety and Occupational Health Inspection (SASOHI) by OSH Program personnel and ensure ergonomics assessments are included ergonomics problems.

(3) Perform or assist in performing in depth ergonomic assessments as needed.

(4) Assist in solving identified ergonomic problems.

(5) Keep accurate records of identified ergonomic hazards and solutions and provide these records to the Ergonomics Subcommittee for review and tracking.

(6) Assist in ergonomics training and education for employees.

(7) At least one representative from Industrial Hygiene Office will serve on the Ergonomics Subcommittee.

(8) Oversee the safety aspects of the ergonomics program for command.

(9) Maintain appropriate records, including the Installation Log of Federal Occupational injuries and illness OSHA No. 300, or equivalent, and the OSH Hazard Abatement Log.

(10) Review injury and illness records related to ergonomic problems, develop trend analysis, and report results to the Ergonomics Subcommittee.

(11) Provide information about problematic work areas to the Ergonomics Subcommittee.

(12) Brief their Commander on Ergonomic Program issues, activities and recommendations.

g. Industrial Hygiene Office (IHO):

(1) The Chief of Industrial Hygiene Office (or a designated representative) will serve as a co-chair of the Ergonomics Subcommittee:

(2) Consider ergonomic hazards during routine work evaluations.

(3) Assist in solving identified ergonomic problems.

(4) Assist in ergonomics training and education for employees.

h. The Chief of Preventive Medicine Service (or a designated representative) will serve as a co-chair of the Ergonomics Subcommittee:

i. The Chief, Occupational Health Cinic, (or a designated Representative) will:

(1) Serve as a member of the Ergonomics Subcommittee:

(2) Ensure that ergonomics trained OH Clinic staff members participate in the evaluation of the workplace and provide employee training and education and medical evaluation of employees presenting with complaints of a work related musculoskeletal disorder (WMSD).

(3) Develop medical protocols/medical directives for the early recognition, treatment, evaluation and follow up of employees with WMSDs.

(4) Develop and conduct baseline screening for new employees.

(5) Assist the Federal Employee Compensation Act (FECA) Office staff, when and where feasible, identifying positions and or duties which meet specific medical restrictions, for employees with a history of WMSDs which preclude the performance of normal duties.

j. The Chief, Department of Orthopedics and Rehabilitation will:

(1) Appoint on orders, an ergonomics trained staff member to serve as a member of the Ergonomics Subcommittee.

(2) Participate in developing medical protocols for the early recognition, evaluation, treatment and follow-up with WMSDs.

(3) Participate in providing appropriate medical care for referred personnel.

(4) Participate in workplace evaluations as resources allow:

(5) Assist in providing training and education.

k. Chief, Civilian Personnel Advisory Center (CPAC) will:

(1) Appoint at least one CPAC trained representative from the FECA Office to serve on the Ergonomics Subcommittee:

(2) Appoint an advisory or support Representative to serve on the Ergonomic Subcommittee.

(3) Participate in training and education of supervisors on preventing and reporting of WMSDs.

(4) As resources permit, participate in evaluation of workplace for ergonomic hazards.

(5) Provide information regarding claims for WMSDs to the Ergonomic Subcommittee.

l. Directorate of Public Works (DPW) will:

(1) Integrate ergonomic considerations intofacility modifications and construction.

(2) Implement recommendations to eliminate or reduce ergonomic risks.

(3) Appoint an advisory or support representative to serve on the Ergonomics Subcommittee.

m. Logistics Office will:

(1) Ensure integration of ergonomic considerations into the purchase of new equipment.

(2) Implement recommendations to reduce ergonomic hazards when feasible.

(3) Consult with the Ergonomics Subcommittee and trained ergonomics personnel to assist in the evaluation of equipment and furniture for ergonomic design.

(4) Appoint an advisory or support representative to serve on the Ergonomics Subcommittee.

n. Union representatives (AFGE, FOP and FPA) will:

(1) Be invited to be a member of the Ergonomics Subcommittee.

(2) Ensure that key personnel recognize and report ergonomic hazards.

(3) Ensure that all unions at the installation be offered the opportunity to appoint an advisory or support member.

o. Engineers and maintenance personnel will:

(1) Prevent and correct ergonomic hazards through job and workstation design and proper maintenance.

(2) Apply ergonomics concepts both in general and in regard to the specific conditions of the facility.

(3) An advisory or support representative from engineering and maintenance will serve on the Ergonomics Subcommittee.

p. MEDCOM Contracting Center-North Atlantic will:

(1) Ensure the integration of ergonomic considerations into the purchase of new equipment.

(2) Implement recommendations from trained ergonomics personnel to reduce WMSD risk factors when feasible.

(3) Appoint an advisory or support representative to serve on the Ergonomics Subcommittee.

q. Supervisors will:

(1) Ensure employees:

(a) Follow safe work practices.

(b) Recognize and correct hazardous work practices.

(c) Recognize and report early symptoms of potential disorder.

(2) Be held accountable for failure to follow safe work practices and recognize initiatives in improving operating condition and procedures through incentive awards.

(3) Routinely review areas for potential ergonomic risks.

(4) Coordinate with the Ergonomics Subcommittee and trained ergonomics, safety, and health personnel to reduce risks and support the overall ergonomics effort.

(5) Maintain effective schedule for facility, equipment, and tool maintenance, adjustments, and modifications.

r. Assigned military personnel and civilian employees will:

(1) Modify work practices as recommended.

(2) Notify supervisors of potential ergonomic hazards in the workplace.

(3) Recognize and report symptoms early.

(4) Participate in the medical surveillance program.

(5) Perform recommended conditioning activities.

(6) Actively participate in the suggestion process.

(7) Use engineering controls, administrative controls and personal equipment to reduce ergonomics.

8. The Ergonomics Program Components

a. Goals

(1) The goals of the ergonomics program are to:

(a) Prevent injuries and illnesses by eliminating or reducing worker exposure to WMSD risk factors.

(b) Reduce the potential for fatigue, error and unsafe acts by adapting the job and workplace to the worker's capabilities and limitations.

(c) Increase overall productivity of the work force.

(d) Reduce workers' compensation claims and associated costs.

(e) Improve overall unit readiness.

(2) An emphasis on early identification and prevention of WMSDs will preserve and protect our military and civilian workforce while decreasing related costs.

b. Organizational involvement: A collaborative partnership among all levels of the working community is essential to achieve these goals.

Command emphasis, commitment by management, and demonstrated visible involvement are imperative to provide the organizational resources and motivation necessary to implement a sound ergonomics policy. All levels of employees (manager, supervisor, work and soldier) need to be involved.

c. Effects of work related muscular skeletal disorders

(1) Health effects. Ergonomic disorders (see glossary for definition) are occupationally related neuromuscular disorders caused or aggravated by repeated bio-mechanical stress and micro trauma. Over time, repeated micro trauma can evolve into a painful, debilitating state involving muscles, tendons, tendon sheaths, and nerves. Tendonitis, tenosynovitis, bursitis, chronic muscle strain, and nerve entrapment syndromes are examples of WMSDs.

(2) Economic effects. The expense associated with a poorly designed workplace is considerable and includes both direct and indirect costs.

(a) Direct costs include medical treatment, rehabilitation, and worker's compensation costs.

(b) Indirect costs include lost work time, decreased productivity, decreased work quality, retraining costs, and diminished morale.

d. Ergonomic risk factors:

(1) Research identifies the following as specific workplace conditions that can contribute to the development of WMSDs.

(a) Repetitive motions (especially during prolonged activities).

(b) Sustained or awkward postures.

(c) Excessive bending or twisting of the wrist.

(d) Continued elbow or shoulder evaluation (for example, overhead work).

(e) Forceful exertions (especially in an awkward posture).

(f) Excessive use of small muscle groups (for example, pinch grip).

(g) Acceleration and velocity of dynamic motions.

(h) Vibration.

(i) Mechanical compression.

(j) Restrictive workstations (for example, inadequate clearances).

(k) Improper seating or support.

(l) Inappropriate hand tools.

(m) Machine-pacing and production-based incentives.

(n) Extreme temperatures.

(o) Extended exposures to hazardous or annoying noise.

(2) The combined effect of several risk factors in one job or workstation may lead to a higher probability of causing WMSD.

e. Specific ergonomic program elements.

(1) Worksite analysis.

(2) Hazard prevention and control.

(3) Education and control.

(4) Health care management.

(5) Education and Training.

(6) Ergonomic Program evaluation.

9. WORKSITE ANALYSIS

a. Problem Identification: Identification of jobs or worksites with ergonomic risk factors can be accomplished using the following procedures of systematic passive and active surveillance and overview of the Worksite Analysis losses in Appendix c.

b. Systematic passive surveillance involves the analysis of data provided in existing monthly or quarterly reports. This analysis can identify ergonomic problems, set intervention priorities, and organize the ergonomics effort. The office responsible for maintaining the records, logs, or reports will perform the systematic passive survellance and communicate the results to the IEO and Ergonomics Subcommittee. Sources of data include:

(1) Routine injury and illness reports.

(2) Occupational Safety and Health Administration (OSHA) No. 200 (Bureau of Labor Statistics Log and Summary of Occupational Injuries and Illnesses) or equivalent.

(3) Federal Employee Compensation Act claims.

(4) DA Form 285, US Army Accident Report.

(5) Medical and Safety Records.

(6) Workforce reports and suggestions.

c. Systematic active surveillance. This procedure involves focused and active efforts to gather information about WMSD at worksites and identify workers at risk of developing a cumulative trauma disorder. Active surveillance should be performed in conjunction with regular training or industrial hygiene or safety surveys.

(1) Systematic active surveillance shall be performed at all worksites at least once per year. Walk-through surveys shall also be performed for any new or significantly changed job, process, equipment or method.

(2) Examples of active surveillance procedures include:

(a) Questionnaires and surveys. Supervisor and worker questionnaires and symptom or body part discomfort surveys provide information about ergonomic hazards, often before actual injuries occur. Trained ergonomics personnel can administer these surveys during walk through surveys, as part of a special survey or as part of regular training.

(b) Observation. Direct observation by trained ergonomics personnel conducting regular walk-through Industrial Hygiene Health Hazard Information Module (HHIM), or safety surveys can identify tasks or situations that are uncomfortable and may indicate ergonomic risks. For example, workers know that cold temperatures make it difficult to grip hand tools.

(c) Sentinel event or incident reporting. Specific health or performance events, such as wrist pain, back pain, or increased errors, may be indicative of WMSD risk factors. Supervisors will report such event to the Safety Office, which will coordinate evaluation and follow-up.

(d) Case referrals. Case referrals may be used to identify a work area with potential WMSDs risk factors. For example, a laboratory technician seeks medical care for hand and wrist pain and provides an occupational history that indicates possible worksite risk factors.

(3) In many cases, corrections to the ergonomic hazards are simple, quick, on-the-spot workplace changes. Ergonomics personnel conducting regular walk-through surveys can identify and implement the solution immediately. Para 10 provides information on ergonomic hazard prevention and control. More complex problems will require prioritization and detailed analyses.

(4) If a worksite or job is identified as high risk, special medical surveillance may be indicated. Para 11 provides information on health care management.

d. Prioritization: Worksites shall be prioritized for detailed analyses based on FECA claims, OHC injury tracking reports and OSHA 200 log or safety incident reports. The prioritization may be based on incidence rates, the number of workers affected, direct costs, lost work time, or severity of cases. Calculate incidence and prevalence rate by unit, work section, or job series to identify high-risk areas. Use FECA claims information to identify high cost injuries and high-risk work areas.

e. Detailed analysis:

(1) Detailed analysis is necessary for further evaluation of those jobs or worksites having ergonomic risk factors as determined by systematic passive and active surveillance. When conducting the detailed analysis, trained ergonomics personnel shall systemically:

(a) Consider the concept of multiple causation (see glossary for definition) and the degree of ergonomic risk.

(b) Look for trends, including age, gender, work task, and time injury.

(c) Identify the work tasks or portions of the process that contain risk factors.

(d) Identify both problems and solutions.

(2) The following data, analysis tools, and methods may be helpful during a detailed analysis.

(a) Incidence rates (OSHA No. 200 equivalent), accident and injury reports, and lost time or absenteeism reports by job, unit, department, or facility.

(b) Checklists, questionnaires, and interviews.

(c) Direct observation, videotape analysis, and job analyses.

(3) Additional assessment methodologies include:

(a) Revised NIOSH Equation for the Design and Evaluation of Manual Lifting Tasks.

(b) Static and dynamic strength testing.

(c) Energy expenditure evaluation.

(d) Timed activity analysis.

(e) Bio-mechanical analysis.

(f) Cardiovascular or metabolic measurements.

10. PREVENTION AND CONTROL OF ERGONOMIC HAZARDS

a. Intervention hierarch: The primary method of preventing and controlling exposure to ergonomic hazards is through effective design (or redesign) of a job or worksite. Intervention methods are defined, in order of priority, in para 10(b-g). Overview of the Hazard Prevention and control process is in Appendix d.

b. Process elimination: Elimination of the ergonomically demanding process essentially eradicates the WMSD hazard. For example, eliminate a meat wrapper's need to use a manual tape dispenser and label applicator by providing an automatic label and tape dispenser.

c. Engineering controls. Ergonomic engineering controls redesign the equipment or worksite to fit the limitations and capabilities of workers. Equipment or worksite redesign typically offers a permanent solution. For example, provide a visual display terminal workstation that can be adjusted to a wide range of anthropometric dimensions.

d. Substitution. Substituting a new work process or tool (without ergonomic hazards) for a work process with identified ergonomic hazards can effectively eliminate the hazard. For example, replace hand tools that require awkward wrist positions (extreme wrist flexion, extension, or deviation) with tools that allow a neutral wrist posture.

e. Work practices. Practices that decrease worker exposure to ergonomic risks include changing work techniques, providing employee-conditioning programs, and regularly monitoring work practices. It also includes equipment maintenance, adjustment, and modification of current equipment and tools, as necessary.

(1) Proper work techniques include methods that encourage correct posture, use of proper body mechanics appropriate use and maintenance of hand and power tools, and correct use of equipment and workstations.

(2) Employee conditioning refers to the use of a conditioning or break-in period. New and returning employees may need gradual integration into a full workload, depending on the job and on the employee. Supervisors, trained ergonomics personnel and health care personnel shall identify those jobs that require a break-in period. Health care personnel should evaluate those employees with documented residual effects or problems related to ergonomic hazards and/or who are returning from a health-related absence, which warrant conditioning to their jobs and define the break-in period for each individual employee.

(3) Regular monitoring of operations helps to ensure proper work practices and to confirm that the work practices do not contribute to cumulative trauma injury or hazardous risk factors.

(4) Effective schedules for facility, equipment, and tool maintenance, adjustments, and modifications will reduce ergonomic hazards. This includes ensuring proper working conditions, having sufficient replacement tools to facilitate maintenance, and ensuring effective housekeeping programs. Tool and equipment maintenance may also include vibration monitoring.

f. Administrative controls: Administrative controls can be used to limit the duration, frequency, and severity of exposure to ergonomic hazards. Examples of administrative controls include, but are not limited to:

(1) Reducing the number of repetitions by decreasing production rate requirements and limiting overtime work.

(2) Reducing the number and speed of repetitions by reducing line or production speed by having worker input into production speed (that is, using worker-based rather than machine-based production speed).

(3) Providing rest breaks to relieve fatigued muscle-tendon groups. Determine the length of the rest break by the effort required, total cycle time, and the muscle-tendon group involved.

(4) Increasing the number of employees assigned to the task (for example, lifting in teams rather than individually).

(5) Instituting job rotation as a preventive measure, with the goal of alleviating physical fatigue and stress to a particular set of muscles and tendons. Job rotations will be used in response to symptoms of WMSD. This can contribute to symptom development in all employees involved in the rotation schedule rather than preventing problems. Trained ergonomics and health care personnel shall conduct an analysis of the jobs in the rotation schedule.

(6) Providing light or restricted duty assignments to allow injured muscle-tendon groups time to rest, assisting in the healing process. Make every effort to provide light or restricted duty assignments when physical limitations (as identified by a health care provider) allow the worker to return to work performing less than his or her normal work requirements. In regard to light or restricted duty assignments:

(a) A health care provider should specifically identify assignments or job tasks for the individual worker based on his or her symptoms, capabilities, and limitations.

(b) Health care providers with specific knowledge in both occupational demands and cumulative trauma injuries shall cooperate with trained ergonomics personnel to develop a list of jobs with low ergonomic risk.

(c) Job descriptions for each light duty position should be written. Civilian personnel representatives and supervisors, in conjunction with health care personnel, shall identify light duty positions and write job descriptions for light and restricted duty positions that conform to documented requirements.

g. Personnel Protective Equipment.
Personal protective equipment (PPE) is not necessarily recommended for controlling exposure to ergonomic hazards, as little research has been conducted to support claims of their usefulness.

(1) Ergonomic appliances, as wrist rests, back belts, back braces, etc., are not considered to be PPE. Before such devices are purchased their effectiveness should be discussed with trained ergonomics personnel.

(2) Consider ergonomic hazards when selecting PPE. The PPE:

(a) Should be available in a variety of sizes.

(b) Should accommodate the physical requirements of the workers and the job.

(c) Should not contribute to ergonomic hazards.

11. HEALTH CARE MANAGEMENT

a. Early evaluation of patient: Early recognition and medical management of WMSDs are critical to reduce the impact of injury on both the employee and the employer.

(1) Common symptoms of WMSDs can include (but are not limited to) pain, tingling, numbness, stiffness, and weakness in the neck, shoulders, arms, hands, back, and legs. Other symptoms can include headaches, visual fatigue, and increased errors.

(2) Soldiers and employees with symptoms of ergonomic disorders should report to medical personnel for an evaluation.

(a) Active duty soldiers should report to their primary care provider.

(b) Civilian employees should report to the Occupational Health Clinic with the appropriate forms: CA-2 (Notice of Occupational Disease and Claim for Compensation) for all ergonomic disorders except back injuries which require CA-1 (Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation) and CA-16 (Authorization for Examination and/or Treatment).

(3) Supervisors shall ensure that symptomatic soldiers and civilian employees report for a medical evaluation in a timely manner.

(4) Disincentives for employee not reporting must be avoided.

b. Medical evaluation. The initial medical evaluation of a patient with a possible ergonomic disorder should include a detailed medical occupational history and a physical examination. Health care personnel shall:

(1) Complete a medical and occupational history that includes:

(a) Military occupational specialty or job title and number of years and months at the job.

(b) Prior work history.

(c) Detailed description of current job tasks and amount of time normally spent on each task.

(d) Detailed description of symptoms to include location, character (Such as burning, sharp, dull, pins and needles), severity, onset, duration, exacerbating and relieving factors.

(e) Lost time or limited duty due to symptoms.

(f) Prior evaluation, diagnosis, and treatment of symptoms.

(g) Other existing medical conditions and history of trauma and surgery.

(h) Activities and hobbies outside of work.

(i) Current medications.

(2) Conduct a physical examination that includes, but need not be limited to:

(a) Appearance (swelling, muscle atrophy, erythematic, ecchymosed).

(b) Range of motion and muscle strength.

(c) Neurologic assessment (motor, sensory, reflexes).

(d) Vascular assessment (pulses, capillary refill).

(e) Evaluation for pain and tenderness.

(f) Special tests, such as median nerve percussion (Tinel's sign) and the wrist reflexion test (Phalen's test) when appropriate.

(3) Perform additional testing as indicated, such as nerve conduction velocities, laboratory tests, and radiographic procedures.

c. Treatment: Health care personnel shall initiate appropriate treatment and rehabilitation as defined by current standards of medical practice. In general, conservative therapy should be tried before invasive treatment.

(1) Supervisors, Civilian Personnel Advisory Center (CPAC), and co-workers shall encourage civilian employees with a suspected work-related ergonomic disorder to seek evaluation and treatment in an Army Medical Treatment Facility (MTF), where possible, according to AR 690-800, para 810, subpara 6. Occupational Health personnel shall coordinate with the CPAC and Patient Administration Division when there are questions about an employee's entitlement to care.

(2) Active duty soldiers with a suspected work-related ergonomic disorder shall be seen in an Army MTF.

d. Light or restricted duty: Health care personnel shall coordinate with trained ergonomics personnel to recommend duty assignments that will not aggravate a patient's condition, as discussed in para 10 (f).

e. Follow-up. Medical personnel shall perform regular follow-up for patients being treated for WMSDs to monitor the efficacy of therapy and worksite intervention.

f. Medical Surveillance.

(1) A general screening medical surveillance program is not indicated for WMSDs. Instead, use the methods of problem identification as described in para 9 and Appendix c health care personnel involved in evaluation and treatment of WMSDs, particularly Occupational Health Clinic personnel, shall:

(a) Conduct periodic, systematic worksite walk-through evaluations to remain knowledgeable about operations and work practices. A minimum of once every 6 months is suggested.

(b) Provide written documentation of the walk-through evaluation to the IEO. Documentation shall include date, area(s) visited, risk factors identified, and actions taken (if any). If prioritized follow-up is needed, it shall also be documented.

(2) Special medical surveillance may be indicated for:

(a) Specific jobs where a high incidence of WMSDs have been demonstrated.

(b) Specific jobs that have been identified as high risk based on systematic active surveillance and detailed analysis as discussed in para 12.

(3) Baseline and periodic health assessment results shall be maintained in employees' medical records. Attention shall be given to any changes that could indicate a WMSD.

g. Reporting. Occupational health, safety, and health care personnel shall use the following forms to document work-related ergonomic disorders:

(1) OSHA No. 200 or equivalent.

(2) CA-2 WMSDs except back injuries.

(3) CA-1, CA-16, CA-17 (Duty Status Report) back injuries.

(4) SF 600 (Health Record-Chronological Record of Medical Care) in the medical record.

(5) DA Form 285 (U.S. Army Accident Report) for reporting military occupational illnesses according to AR 385-40, Chapter 3-5.

h. Worksite evaluation referrals: Health care personnel who are treating a patient with a suspected WMSD shall request a worksite evaluation for the patient through the IEO and the Ergonomics Subcommittee. Trained ergonomics personnel, together with health care personnel, should conduct the worksite evaluation. An overview of the Health Care Management Process is in Appendix e.

12. EDUCATION AND TRAINING:

a. The "train the trainer" concept administers training programs in a pyramid fashion.

(1) Ergonomic experts provide training to develop trained ergonomics personnel.

(2) Trained ergonomics personnel.

(a) Then train others at the installation level, including supervisors and workers.

(b) May also train special assistants, who can help with recognizing ergonomic hazards and WMSDs. The special assistants may be a representative from each department or division who assist other department members in recognizing and reporting ergonomic hazards and WMSDs.

b. Education Requirements:

(1) The IEO will have:

(a) A minimum of 40 hours of formal ergonomic training.

(b) Training and experience sufficient to identify ergonomic hazards and risk factors.

(2) Trained ergonomics personnel shall have:

(a) A minimum of 40 hours of formal ergonomics training. Formal training is classroom instruction, exercises, supervised worksite assessment, and individual learning assignments.

(b) Training and experience sufficient to identify ergonomic hazards and risk factors.

(3) Core Ergonomics Subcommittee members, support and advisory Ergonomics Subcommittee members, and installation–level personnel providing assistance in recognizing ergonomic hazards and WMSDs shall have basic ergonomics training, to include elements listed in para 12c(3), from trained ergonomics personnel.

c. Training Requirements: Personnel responsible for administering the program shall receive appropriate special training. Training is necessary for all levels of civilian employees and active duty soldiers to enable them to understand and recognize potential ergonomic hazards and actively participate in the ergonomics effort.

(1) Personnel requiring training.

(a) All employees who are potentially exposed to WMSDs.

(b) Supervisors.

(c) Managers.

(d) Engineers and maintenance personnel.

(e) Installation Safety and Occupational Health personnel.

(2) The instructor.

(a) Trained ergonomics personnel shall conduct training.

(b) Suitable health care personnel shall conduct specific portions of training, such as those related to health risks.

(3) Curriculum considerations. Trained ergonomics personnel shall:

(a) Present training at a level appropriate to ensure audience comprehension.

(b) Include in the training curriculum an overview of:

(1) The potential risk of ergonomic disorders.

(2) The possible causes and symptoms.

(3) How to recognize and report symptoms.

(4) The means of prevention.

(5) The sources of treatment.

(c) Include methods for evaluating the effectiveness of the ergonomics effort, as discussed in para 10.

(4) Types of training.

(a) General training. Employees who are potentially exposed to ergonomic hazards will receive formal instruction on hazards associated with their jobs and equipment. Employees will receive training at an initial orientation and annually thereafter. This training will include elements listed in para 12c(3).

(b) Specific training. New employees and reassigned workers who are potentially exposed to ergonomic hazards receive an initial orientation and hands-on training from trained ergonomics personnel and the immediate supervisor prior to being placed in a full-production position. The initial orientation will include:

(1) A demonstration of the proper use and care of, and the proper operating procedures, for, all tools and equipment used in the employees' workplace.

(2) Use of safety equipment.

(3) Use of safe and proper work procedures, such as proper lifting techniques.

13. ERGONOMIC PROGRAM EVALUATION

a. External evaluations.

(1) Upon request, US Army Center for Health Promotion and Preventive Medicine (USACHPPM) is available to assist with ergonomic program development and evaluation.

(2) Authorized OSHA inspections may result in citations to the activity commander for ergonomic deficiencies identified in the workplace.

b. Internal Evaluations: The IEO ensures evaluation of the ergonomics effort regarding program participation and effectiveness. Methods for measuring both of these elements are listed below:

(1) Program participation:

(a) Number of requests for ergonomic assistance by management occurring during a specified period.

(b) Number of employee suggestions related to ergonomics during a specified period.

(c) Number of education programs in ergonomics offered or number of personnel attending education programs.

(2) Program effectiveness:

(a) Number of general or systematic identifications of potential ergonomic hazards.

(b) Number of detailed analyses conducted.

(c) Number of high priority listings relating to ergonomics.

(d) Change in the incidence rate (see glossary) of ergonomically related illness or injury reports filed for military and civilians.

(e) Change in the incidence rate of ergonomically related illness or injury reports failed for military and civilians.

(f) Change in the incidence rate of ergonomically related injury by department or unit.

(g) Change in the incidence rate of lost or restricted duty time due to ergonomically related illness or injury.

(h) Change in the number of new job reassignments due to ergonomically related illness or injury.

(i) Change in productivity or production costs that can be attributed to ergonomic interventions. In some cases, there may be an increase in illness or injury reporting at the start of an ergonomics program due to increase in illness or injury reporting at the start of an ergonomics program due to increased employee and supervisor awareness. This reporting rate decreases as the program becomes established.

c. Regular program evaluation and review

(1) The IEO and the Ergonomics Subcommittee will:

(a) Conduct at least a semi-annual program evaluation and review.

(b) Present the results of this program evaluation and review to the installation SOHAC.

(c) Communicate the results of the program evaluation and review to top management and all workplace personnel.

(2) The program evaluation assesses the implementation, progress, and effectiveness of the ergonomics plan. It shall include:

(a) Summary progress report or program update.

(b) Plans, goals, and accomplishments for the program as a whole and by the critical program elements cited in para 9d(c). Accomplishments shall include intervention results in terms of incidence rate changes, productivity improvements, and economic results as discussed in para 10-3b.

(c) Identification of trends, deficiencies, and corrective action needed.

(d) New or revised program goals, priorities, and time lines.

d. Data Sources. Sources of information for use in developing the evaluation and review include:

(1) Federal Employee Compensation Act (FECA) claims to be utilized also in analysis of trends in injury or illness rates according to:

(a) Health care facility sign-in logs.

(b) OSHA No. 200 or an equivalent log.

(c) Individual employee medical records.

(d) The Health Hazard Inventory Module (HHIM).

(2) Review of results of installation evaluations.

(3) Before and after surveys or evaluation of worksite improvements.

(4) Observation of work practices to determine the effect of training and education.

(5) Employee surveys or interviews conducted by department, job title, or work area to monitor trends.

APPENDIX A
References

SECTION I
Required Publications

AR 40-5
Preventive Medicine. 15 October 1990, (Cited in paragraph 3 and 6).

AR 385-10
The Army Safety Program. 29 February 2000 (Cited in Chapter 1-4 and 2-1).

AR 385-40
Accident Reporting and Records. 1 November 1994 (Cited in Chapter 2-6).

DA Pam 40-21
Medical Service, Ergonomics Program,15 May 2000.

HQDA Ltr 40-02-1
DASG, 14 July 2002, subject: Army Ergonomics Program (Expires 14 July 2004).

SECTION II

Related Publications
A related publication is merely a source of additional information. The user does not have to read it to understand this pamphlet.

AR 40-10
Health Hazard Assessment Program, 1 October 2001.

DA Pam 40-503
Industrial Hygiene Program, 30 October 2000.

DODI 6055.1
DOD Occupational Safety and Health Program

EO 12196
Occupational Safety and Health Programs for Federal Employees

PL 91-596
Occupational Safety and Health Act of 1970, as amended (29 USC 651, et seq. (1976).

29 CFR 1910.5(a)(1)
General Duty Clause -29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters. (Available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402).

American National Standards Institute. (1993). Control of Cumulative Trauma Disorders - ANSI Z-365 Draft. National Safety Council (NSC), Itasca, IL. (Available at cost from NSC, P.O. Box 558, Itasca, IL 60143-0429).

Appendix A (Continued)

SECTION II
Related Publications

Rehabilitation Act of 1973, as amended by the Americans with Disabilities Act of 1990.

Chapanis, A., 1991. To Communicate the Human Factors Message, You Have to Know What the Message Is and How to Communicate It. Human Factors Society Bulletin, Vol 34 (11): 1-4.

Directorate of Civilian Personnel and Installation Safety. 1992.
A Supervisors Guide to the Civilian Resource Conservation Program. (Available from the Directorate of Civilian Personnel and Installation Safety, Fort McPherson, Georgia).

Revised NIOSH Equation for the Design and Evaluation of Manual Lifting Tasks. Available from National Institute for Occupational Safety and Health (NIOSH), 4676 Columbian Parkway, Cincinnati, OH 45226.

Rice, V. J. (in press). Ergonomics: An introduction. In K. Jacobs and C. Bettencourt (Eds.), Musculoskeletal Ergonomics for Therapists. New York: Andover Press.

Rice, V. J., and Sind, P.M. (1991, June). Ergonomics worksite risk analysis workshop (handbook). Presented at the American Occupational Therapy Association Annual Conference: Cincinnati, Ohio.

U.S. Department of Labor, OSHA. 1991. Ergonomics Program Management Guidelines for Meatpacking Plants, OSHA Publication #3123. (Available from OSHA, 200 Constitution Ave., N.W., N3651, Washington, D.C. 20210).

U.S. Department of Labor, OSHA. 1991. Ergonomics Program

Management Recommendations for General Industry. (Available from OSHA, 200 Constitution Ave., N.W., N3651, Washington, D.C. 20210).

SECTION III
Referenced Forms

CA-1
Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation

CA-2
Notice of Occupational Disease and Claim for Compensation

CA-16
Authorization for Examination and/or Treatment

CA-17
Duty Status Report

DA Form 285
U.S. Army Accident Report

OSH Hazard Abatement Log

APPENDIX A (Continued)

SECTION III
Referenced Forms

OSHA No. 200
Bureau of Labor Statistics Log and Summary of Occupational Injuries and Illnesses

SF 600
Health Record--Chronological Record of Medical Care

Unnumbered OSHA Form

Log of Federal Occupational Injuries and Illnesses. Available from the office of Federal Agency Programs, 200 Constitution Avenue, N.W., Washington, DC 20210.

Appendix B
Membership of the Ergonomics Subcommittee

B-1. Chairperson.

The IEO will: Serve as chairperson of the Ergonomics Subcommittee.

B-2. Membership.

The Ergonomics Subcommittee should include, but need not be limited to, representative of the following offices:

a. Core membership.

(1) Occupational Health Clinic.

(2) Industrial Hygiene Office.

(3) Safety Offices.

(4) Civilian Personnel Advisory Center, (CPAC).

(5) Department of Orthopedics' and Rehabilitation.

(6) Union(s).

b. Support and advisory membership.

(1) Directorate of Public Works.

(2) Logistics Office.

(3) MEDCOM Contracting Center - North Atlantic.

(4) Community Activities Directorate.

All subcommittee members should receive appropriate ergonomics training as discussed in Paragraph 12.

Glossary
SECTION I

Abbreviations

AR……Army Regulation

ARNG……..Army National Guard

ASD……..Administrative Services Division

C……Chief

CPAC……Civilian Personnel Advisory Center

CTD……..……Cumulative Trauma Disorder

D……..Director

DA……..Department of the Army

DODI…….……Department of Defense Instruction

DOIM……..Directorate of Information Management

DPW……Directorate of Public Works

FECA…..……..……..Federal Employee Compensation Act

HHIM……...Health Hazard Inventory Module

HQ……Headquarters

IAW……In Accordance With

IEO…….……Installation Ergonomics Officer

IMD……...Information Management Division

MACOM……..……Major Army Command

MARKS……..……..The Modern Army Record Keeping System

MEDCOM……..……US Army Medical Command

MTF……..……Medical Treatment Facility

NIOSH…… National Institute for Occupational Safety and Health

OSH……..Occupational Safety and Health

OSHA ……Occupational Safety and Health Administration

PPE……Personal Protective Equipment

RAC……Risk Assessment Code

SASOHI……..Safety and Occupational Health Inspection

SOH……..Safety and Occupational Health

SOHAC……..Safety and Occupational Health Advisory Council

USACHPPM……..US Army Center for Health Promotion and Preventive Medicine

USAR……U.S. Army Reserve

USASC……U.S. Army Safety Center

WF……WRAMC Form

WMSD……Work related Musculoskeletal Disorder

WRAMC……..Walter Reed Army Medical Center

XO……..Executive Officer

SECTION II
Terms

Anthropometry - Refers to the study of the physical dimensions of people, including size, breadth, girth, distance between anatomical points, and joint range of motion. This information is used in the design and analysis of workspaces, tools, and equipment.

Cumulative Trauma Disorders (CTDs) - CTDs are ergonomic disorders of the musculoskeletal or nervous system which are the result of, or contributed to by, the biomechanical risk factors listed in paragraph 2-4. CTDs are a class of musculoskeletal disorders involving damage to the tendons, tendon sheaths, synovial lubrication of the tendon sheaths, and the related bones, muscles, and nerves. Synonymous terms include repetitive motion injury, occupational overuse syndrome, and repetitive strain injury.

Equivalent Civilian Training - Minimum of 36 hours training covering CTDs; workstation and job design; hand tool design; current regulatory requirements and issues; analysis and design of manual materials handling tasks; analysis and design of the office environment; and conducting, analyzing, documenting, and presenting an ergonomic worksite evaluation, including hands-on experience.

Ergonomics - Ergonomics is a body of knowledge about human abilities, human limitations, and other human characteristics that are relevant to the design of tools, machines, systems, tasks, jobs, and environments for safe, comfortable, and effective human use. The aim of the discipline is to fit the job to the person in order to:

a. Prevent the development of occupational injury or illness.

b. Reduce the potential for fatigue, error, or unsafe acts.

c. Increase effective, efficient work.

Ergonomic Disorders

a. Ergonomic disorders include the range of health problems arising from repeated stress to the body encountered in the workplace. These health problems may affect the musculoskeletal, nervous, and neurovascular systems and include the various occupationally induced CTDs, cumulative stress injuries, and repetitive motion disorders.

b. Examples of ergonomic disorders include damage to tendons, tendon sheaths, synovial lubrication of the tendon sheaths, bones, muscles, and nerves of the hands, wrists, elbows, shoulders, necks, backs, and legs. Some ergonomic disorders that are reported include chronic back pain, carpal tunnel syndrome, DeQuervains disease, epicondylitis (tennis elbow), Raynaud's syndrome (white finger), synovitis, stenosing tenosynovitis crepitans (trigger finger), tendinitis, and tenosynovitis.

Ergonomics expert or ergonomics professional
The ergonomics expert:

a. Possesses a recognized degree or professional credentials in ergonomics or human factors engineering (typically a master's or doctorate degree).

b. Demonstrates the ability to identify and correct ergonomic hazards in the workplace.

c. Teaches the ergonomics I and II courses in which trained ergonomics personnel are unable to solve identified problems. In most cases, an ergonomics expert will not be available at each installation.

Ergonomics team - The ergonomics team refers to workplace conditions that may harm the worker: Improperly designed workstations, tools and equipment; improper work methods; and excessive tool or equipment vibration are examples. Other examples include aspects of work flow, line speed, posture, force required, work and rest regimens, and repetition rates.

Health care personnel - Health care personnel include occupational therapists, physical therapists, physicians, physician assistants, nurses, and other health care professionals, and their related, supervised technicians (for example, certified occupational therapy assistants and licensed practical nurses). Health care personnel participating in the ergonomics and epidemiology and be up-to-date in the systematic recognition, evaluation, treatment, and rehabilitation of CTDs.

Incidence Rate

$$\text{Incidence Rate per 1,000} = \frac{\text{Number of new cases of a disease* occurring in the population during a specified period of time}}{\text{Number of persons exposed to risk of developing the disease* during that period of time.}} \times 1{,}000$$

$$\text{Prevalence Rate per 1,000} = \frac{\text{Number of cases of disease* present in the population at a specified time}}{\text{Number of persons in the population at the specified time.}} \times 1{,}000$$

*Disease is interchangeable with illness or injury.

a. Use incidence rates if possible, as the incidence rate measures new cases occurring over a period of time, while prevalence rates give a “snapshot” picture of the number of individuals affected at a specific point in time. Incidence rate allows monitoring of changes over time, rather than recounting chronic problems throughout the duration of the illness or injury.

b. The prevalence rate may be used if number of persons exposed is unknown. The prevalence rate deals with a specific time and all cases.

c. Consistency in reporting is important; therefore, one should use either incidence or prevalence rates for purposes of comparison.

Microtrauma - Refers to a series of minor stresses to the body, each of which alone does not cause discernible damage; however, their accumulation over time can lead to ergonomic disorders. These disorders (injuries or syndromes) are also known as CTDs, overuse disorders, repetitive motion injuries, repetitive strain injuries, occupational motion-related injuries, regional musculoskeletal disorders, and work-related disorders.

Multiple causation - The combined effect of several risk factors in one job, operation, or workstation, which may increase the possibility of CTDs.

Occupational illness

a. To be recorded as an occupational illness, the condition must be diagnosed by a physician, registered nurse, or other person who, by training or experience, is capable of making such a determination (such as an occupational therapist, physical therapist, or physician assistant).

b. To be classified as an occupational illness, the condition must meet the following criteria:

(1) Either physical findings or subjective symptoms must exist, that is, at least one physical finding (for example, positive Tinel's Phalen's, or Finkelstein's test; swelling, redness, or deformity; or loss of motion or strength) or at least one subjective symptom (for example, pain, numbness, tingling, aching, stiffness, or burning).

(2) At least one of the following response actions must occur: medical treatment (including self-administered treatment if made available to employees by their employer), lost or restricted work activity, or transfer or rotation to another job.

(3) CTDs must be associated with repeated trauma, and exposure at work must have caused or contributed to the onset of symptoms or aggravated existing symptoms.

Pinch grip
A grip that involves one or more fingers and the thumb.

Trained ergonomics personnel
Trained ergonomics personnel are health care, industrial hygiene, environmental science, safety, or engineering personnel with approved training in ergonomics. Minimum acceptable training for installation-level trained ergonomics personnel are the 36-hour ergonomics I and II training classes offered by the USACHPPM (Prov), or equivalent civilian training.

Working community - The working community includes all members of the work environment, at all levels of authority. It consists of MACOM commanders, installation commanders, the designated IEO, identified ergonomics personnel, health care personnel, safety personnel, the CPAC, contracting support, DPW, logistics, union representatives, unit commanders, supervisors, and active duty military and civilian personnel. The important element is that all members of the working community must be considered equal and share the commitment to ergonomics for the program to be successful.

Worksite - Worksite refers to a work area or work environment.

Workstation - Workstation refers to an employee's work area, such as a desk, chair, and computer terminal or an individual inspection station.

The proponent agency of this publication is the Directorate of Safety Health and Environment. Send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, Walter Reed Army Medical Center, ATTN: MCWR-SM, 6900 Georgia Avenue, NW, Washington, DC, 20307-5001.

FOR THE COMMANDER:

OFFICIAL:

RANDAL L. TREIBER
Colonel, MS
Garrison Commander

SAMUEL A. MCFARLAND III
Executive Officer
US Army Garrison, WRAMC

DISTRIBUTION:
A